1. Give a DFA for each of the following languages:

   (a) (4 points) All strings over \{a, b, c\} that contain an odd number of b’s
   (b) (4 points) All strings over \{a, b, c\} that contain an even number of a’s and an odd number of b’s
   (c) (4 points) All strings over \{a, b\} that contain either bab or aab (or both)
   (d) (4 points) All strings over \{a, b\} that contain both bab and aab
   (e) (4 points) All strings over \{a, b\} that contain bab but not aab

2. Give a NFA for each of the following languages:

   (a) (4 points) $L = \text{All strings over } \{a, b, c, d\} \text{ of length at least 2 whose second symbol does not appear elsewhere in the string.}$ So bdabc, acbab, bacbd, abcdc $\in L$, while aa, bcabc, abcbc, dd $\notin L$
   (b) (4 points) $L = \text{All strings over } \{a, b, c\} \text{ such that every c is followed by either the substring bab or baa}$
   (c) (4 points) $L = \text{All strings over } \{a, b, c\} \text{ that end in abbac.}$